

Wildlife Interpretations

General

Soils directly affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the development of water impoundments. The kind and abundance of wildlife that populate an area depend largely on the amount and distribution of food, cover, water, and living space. If any one of these elements is missing, inadequate, or inaccessible, wildlife will be scarce or will not inhabit the area. If the soils have the potential, wildlife habitat can be created or improved by planting appropriate vegetation, properly managing the existing plant cover, and fostering the natural establishment of desirable plants.

Soils are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife. It can also be used in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat.

Suitability Ratings

GOOD - means that the element of wildlife habitat or the kind of habitat is easily created, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected if the soil is used for the designated purpose.

FAIR - means that the element of wildlife habitat or kind of habitat can be created, improved, or maintained in most places. Moderately intensive management is required for satisfactory results.

POOR - means that limitations are severe for the designated element or kind of wildlife habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and requires intensive effort.

Description of Wildlife Habitat Elements

Grain and seed crops are seed-producing annuals used by wildlife. Examples are corn, wheat, rye, oats, barley, millet, buckwheat, and sunflowers.

Grasses and legumes are domestic perennial grasses and herbaceous legumes that are planted for wildlife food and cover. Examples are fescue, bluegrass, brome grass, timothy, orchard grass, clover, alfalfa, trefoil, reed canary grass, and crown vetch.

Wild herbaceous plants are native and naturally established herbaceous grasses, forbs, and weeds, that provide food and cover for wildlife. Examples are bluestem, indiagrass, blueberry, goldenrod, lambsquarters, dandelions, blackberry, ragweed, wheatgrass, fescue, and nightshade.

Hardwood trees and the associated woody understory provide cover for wildlife and produce nuts or other fruit, buds, catkins, twigs, bark, or foliage that wildlife eat. Examples of native plants are oak, poplar, cherry, apple, birch, beech, maple, hickory, hazelnut, black walnut, and viburnum. Examples of fruit-bearing shrubs that are

commercially available and suitable for planting on soils rated good are hawthorn, honeysuckle, sumac, silky dogwood, highbush cranberry, autumn olive, and crabapple.

Coniferous plants are cone-bearing trees, shrubs, or ground cover that furnish habitat or supply food in the form of browse, seed, or fruit-like cones. Examples are pine, spruce, hemlock, fir, yew, cedar, larch, and juniper.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites, exclusive of submerged or floating aquatics. They produce food or cover for wildlife that use wetland as habitat. Examples of wetland plants are smartweed, wild millet, rushes, sedges, reeds, wildrice, arrowhead, water plantain, pickerelweed, and cattail.

Shallow water are bodies of surface water that have an average depth of less than 5 feet and are useful as habitat for wildlife. They can be naturally wet areas, or they can be created by dams or levees, or by water-control devices in marshes or streams. Examples are muskrat marshes, waterfowl feeding areas, wildlife watering developments, beaver ponds, and other wildlife ponds.

Kinds of Wildlife Habitat

Open land habitat consists of croplands, pastures, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. The kind of wildlife attracted to these areas include bobwhite quail, pheasant, meadowlark, field sparrow, killdeer, cottontail rabbit, red fox, and woodchuck.

Woodland habitat consists of hardwood or conifers, or a mixture of these and associated grasses, legumes and wild herbaceous plants. Examples of wildlife attracted to this habitat are wild turkey, woodcock, thrushes, woodpeckers, owl, tree squirrels, gray fox, porcupine, raccoon, and deer.

Wetland habitat consists of water-tolerant plants in open, marshy or swampy, shallow water areas. Examples of wildlife attracted to this habitat are ducks, geese, herons, bitterns, rails, kingfishers, muskrat, otter, mink, and beaver.

This subsection includes:

- **(a) Wildlife Management Ratings (one or two tables)**

Table 14.--Wildlife Habitat

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Grain and seed crops (for use as food and cover)		Domestic grasses and legumes (for use as food and cover)		Upland wild herbaceous plants		Upland shrubs and vines		Upland deciduous trees	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
40000: Barden-----	Moderately limited moderate erodibility (moderately limited) percs slowly (moderately limited) wetness (slightly limited)	0.50 0.39 0.28	Moderately limited moderate erodibility (moderately limited) percs slowly (moderately limited) wetness (slightly limited)	0.50 0.39 0.28	Slightly limited wetness (slightly limited)	0.28	Slightly limited wetness (slightly limited)	0.28	Moderately limited wetness (moderately limited)	0.45
40011: Barco-----	Limited droughty (limited) moderate erodibility (moderately limited) depth to bedrock (slightly limited)	0.98 0.50 0.30	Moderately limited moderate erodibility (moderately limited) depth to bedrock (slightly limited)	0.50 0.30	Not limited		Slightly limited depth to bedrock (slightly limited)	0.30	Slightly limited depth to bedrock (slightly limited)	0.30
40015: Eldorado-----	Limited droughty (very limited)	0.99	Not limited		Not limited		Not limited		Not limited	
40016: Eldorado-----	Very limited droughty (very limited) moderate erodibility (moderately limited) large stones (moderately limited)	1.00 0.50 0.45	Limited droughty (limited) moderate erodibility (moderately limited) large stones (moderately limited)	0.83 0.50 0.45	Limited droughty (limited) large stones (slightly limited) small stones (slightly limited)	0.83 0.17 0.07	Limited droughty (limited) large stones (slightly limited)	0.83 0.17	Limited droughty (limited) large stones (slightly limited)	0.83 0.17
40017: Maple Grove----	Moderately limited wetness (moderately limited) moderate erodibility (moderately limited) percs slowly (slightly limited)	0.57 0.50 0.13	Moderately limited wetness (moderately limited) moderate erodibility (moderately limited) percs slowly (slightly limited)	0.57 0.50 0.13	Moderately limited wetness (moderately limited)	0.57	Moderately limited wetness (moderately limited)	0.57	Limited wetness (limited)	0.91

Table 14.--Wildlife Habitat--Continued

Map symbol and soil name	Grain and seed crops (for use as food and cover)		Domestic grasses and legumes (for use as food and cover)		Upland wild herbaceous plants		Upland shrubs and vines		Upland deciduous trees	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
40018: Medoc-----	Limited wetness (limited) percs slowly (moderately limited)	0.89 0.39	Limited wetness (limited) percs slowly (moderately limited)	0.89 0.39	Limited wetness (limited)	0.89	Limited wetness (limited)	0.89	Very limited wetness (very limited)	1.00
40019: Newtonia-----	Not limited		Not limited		Not limited		Not limited		Not limited	
Eldorado-----	Limited droughty (very limited)	0.99	Not limited		Not limited		Not limited		Not limited	
40020: Newtonia-----	Not limited		Not limited		Not limited		Not limited		Not limited	
Eldorado-----	Limited droughty (very limited)	0.99	Not limited		Not limited		Not limited		Not limited	
40021: Opolis-----	Limited wetness (limited) moderate erodibility (moderately limited) percs slowly (moderately limited)	0.63 0.50 0.40	Limited wetness (limited) moderate erodibility (moderately limited) percs slowly (moderately limited)	0.63 0.50 0.40	Limited wetness (limited)	0.63	Limited wetness (limited)	0.63	Very limited wetness (very limited)	1.00
Hepler-----	Moderately limited flooding (moderately limited) moderate erodibility (moderately limited) wetness (moderately limited)	0.60 0.50 0.60	Moderately limited flooding (moderately limited) moderate erodibility (moderately limited) wetness (moderately limited)	0.60 0.50 0.60	Moderately limited wetness (moderately limited)	0.60	Moderately limited wetness (moderately limited)	0.60	Limited wetness (limited)	0.99
40022: Opolis-----	Limited wetness (limited) percs slowly (moderately limited)	0.63 0.40	Limited wetness (limited) percs slowly (moderately limited)	0.63 0.40	Limited wetness (limited)	0.63	Limited wetness (limited)	0.63	Very limited wetness (very limited)	1.00

Table 14.--Wildlife Habitat--Continued

Map symbol and soil name	Grain and seed crops (for use as food and cover)		Domestic grasses and legumes (for use as food and cover)		Upland wild herbaceous plants		Upland shrubs and vines		Upland deciduous trees	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
40023: Opolis-----	Limited wetness (limited) moderate erodibility (moderately limited) percs slowly (moderately limited)	0.63 0.50 0.40	Limited wetness (limited) moderate erodibility (moderately limited) percs slowly (moderately limited)	0.63 0.50 0.40	Limited wetness (limited)	0.63	Limited wetness (limited)	0.63	Very limited wetness (very limited)	1.00
40024: Opolis-----	Limited wetness (limited) moderate erodibility (moderately limited) percs slowly (moderately limited)	0.63 0.50 0.40	Limited wetness (limited) moderate erodibility (moderately limited) percs slowly (moderately limited)	0.63 0.50 0.40	Limited wetness (limited)	0.63	Limited wetness (limited)	0.63	Very limited wetness (very limited)	1.00
40026: Sylvania-----	Moderately limited wetness (moderately limited) moderate erodibility (moderately limited) small stones (moderately limited)	0.53 0.50 0.33	Moderately limited wetness (moderately limited) moderate erodibility (moderately limited) small stones (moderately limited)	0.53 0.50 0.33	Moderately limited wetness (moderately limited) small stones (slightly limited)	0.53 0.04	Moderately limited wetness (moderately limited)	0.53	Limited wetness (limited)	0.79
40027: Sylvania-----	Limited small stones (limited) high erodibility (limited) droughty (limited)	1.00 0.80 0.66	Limited small stones (limited) high erodibility (limited) percs slowly (slightly limited)	1.00 0.80 0.13	Slightly limited small stones (slightly limited) wetness (slightly limited)	0.24 0.04	Slightly limited wetness (slightly limited) small stones (slightly limited)	0.04 0.01	Moderately limited wetness (moderately limited)	0.32
40028: Sylvania-----	Limited high erodibility (limited) percs slowly (slightly limited)	0.80 0.13	Limited high erodibility (limited) percs slowly (slightly limited)	0.80 0.13	Not limited		Not limited		Slightly limited wetness (slightly limited)	0.20

Table 14.--Wildlife Habitat--Continued

Map symbol and soil name	Grain and seed crops (for use as food and cover)		Domestic grasses and legumes (for use as food and cover)		Upland wild herbaceous plants		Upland shrubs and vines		Upland deciduous trees	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
440029: Sylvania-----	Limited high erodibility (limited) wetness (moderately limited) percs slowly (slightly limited)	0.80 0.53 0.13	Limited high erodibility (limited) wetness (moderately limited) percs slowly (slightly limited)	0.80 0.53 0.13	Moderately limited wetness (moderately limited)	0.53	Moderately limited wetness (moderately limited)	0.53	Limited wetness (limited)	0.79
44000: Cherokee-----	Limited wetness (limited) percs slowly (moderately limited)	0.89 0.40	Limited wetness (limited) percs slowly (moderately limited)	0.89 0.40	Limited wetness (limited)	0.89	Limited wetness (limited)	0.89	Very limited wetness (very limited)	1.00
44002: Carl-----	Very limited percs slowly (very limited) wetness (very limited) too clayey (slightly limited)	1.00 1.00 0.16	Very limited percs slowly (very limited) wetness (very limited) too clayey (slightly limited)	1.00 1.00 0.16	Very limited wetness (very limited) too clayey (slightly limited)	1.00 0.16	Very limited wetness (very limited) too clayey (slightly limited)	1.00 0.16	Very limited wetness (very limited)	1.00
44004: McCune-----	Moderately limited wetness (moderately limited) percs slowly (moderately limited)	0.60 0.39	Moderately limited wetness (moderately limited) percs slowly (moderately limited)	0.60 0.39	Moderately limited wetness (moderately limited)	0.60	Moderately limited wetness (moderately limited)	0.60	Limited wetness (limited)	0.99
46001: Verdigris-----	Limited flooding (limited)	0.90	Limited flooding (limited)	0.90	Not limited		Not limited		Not limited	
46002: Hepler-----	Moderately limited flooding (moderately limited) wetness (moderately limited) percs slowly (slightly limited)	0.60 0.60 0.17	Moderately limited flooding (moderately limited) wetness (moderately limited) percs slowly (slightly limited)	0.60 0.60 0.17	Moderately limited wetness (moderately limited)	0.60	Moderately limited wetness (moderately limited)	0.60	Limited wetness (limited)	0.99

Table 14.--Wildlife Habitat--Continued

Map symbol and soil name	Grain and seed crops (for use as food and cover)		Domestic grasses and legumes (for use as food and cover)		Upland wild herbaceous plants		Upland shrubs and vines		Upland deciduous trees	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
46004: Osage-----	Very limited percs slowly (very limited) wetness (very limited) flooding (moderately limited)	1.00 1.00 0.60	Very limited percs slowly (very limited) wetness (very limited) flooding (moderately limited)	1.00 1.00 0.60	Very limited wetness (very limited) too clayey (slightly limited)	1.00 0.03	Very limited wetness (very limited) too clayey (slightly limited)	1.00 0.03	Very limited wetness (very limited)	1.00
46005: Verdigris-----	Moderately limited flooding (moderately limited)	0.60	Moderately limited flooding (moderately limited)	0.60	Not limited		Not limited		Not limited	
70006: Credon-----	Limited droughty (limited) moderate erodibility (moderately limited) wetness (moderately limited)	0.74 0.50 0.36	Moderately limited moderate erodibility (moderately limited) wetness (moderately limited) percs slowly (slightly limited)	0.50 0.36 0.13	Moderately limited wetness (moderately limited)	0.36	Moderately limited wetness (moderately limited)	0.36	Moderately limited wetness (moderately limited)	0.51
70012: Hoberg-----	Limited droughty (limited) moderate erodibility (moderately limited) wetness (moderately limited)	0.63 0.50 0.44	Moderately limited moderate erodibility (moderately limited) wetness (moderately limited)	0.50 0.44	Moderately limited wetness (moderately limited)	0.44	Moderately limited wetness (moderately limited)	0.44	Moderately limited wetness (moderately limited)	0.59
70045: Keeno-----	Very limited droughty (very limited) moderate erodibility (moderately limited) wetness (moderately limited)	1.00 0.50 0.44	Very limited droughty (very limited) moderate erodibility (moderately limited) wetness (moderately limited)	1.00 0.50 0.44	Very limited droughty (very limited) wetness (moderately limited)	1.00 0.44	Very limited droughty (very limited) wetness (moderately limited)	1.00 0.44	Very limited droughty (very limited) wetness (moderately limited)	1.00 0.59

Table 14.--Wildlife Habitat--Continued

Map symbol and soil name	Grain and seed crops (for use as food and cover)		Domestic grasses and legumes (for use as food and cover)		Upland wild herbaceous plants		Upland shrubs and vines		Upland deciduous trees	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70056: Crackerneck---	Very limited droughty (very limited) small stones (very limited) moderate erodibility (moderately limited)	1.00 1.00 0.50	Very limited small stones (very limited) droughty (very limited) moderate erodibility (moderately limited)	1.00 1.00 0.50	Very limited droughty (very limited) small stones (limited) wetness (moderately limited)	1.00 0.68 0.31	Very limited droughty (very limited) small stones (limited) wetness (moderately limited)	1.00 0.68 0.31	Very limited droughty (very limited) wetness (moderately limited) large stones (slightly limited)	1.00 0.46 0.17
70057: Crackerneck---	Very limited droughty (very limited) small stones (very limited) high erodibility (limited)	1.00 1.00 0.80	Very limited small stones (very limited) droughty (very limited) high erodibility (limited)	1.00 1.00 0.80	Very limited droughty (very limited) small stones (limited) wetness (moderately limited)	1.00 0.68 0.31	Very limited droughty (very limited) small stones (limited) wetness (moderately limited)	1.00 0.68 0.31	Very limited droughty (very limited) wetness (moderately limited) large stones (slightly limited)	1.00 0.46 0.17
70058: Crackerneck---	Very limited droughty (very limited) small stones (very limited) wetness (moderately limited)	1.00 1.00 0.31	Very limited small stones (very limited) droughty (limited) wetness (moderately limited)	1.00 0.88 0.31	Limited droughty (limited) small stones (moderately limited) wetness (moderately limited)	0.88 0.42 0.31	Limited droughty (limited) wetness (moderately limited) small stones (slightly limited)	0.88 0.31 0.30	Limited droughty (limited) wetness (moderately limited)	0.88 0.46
70059: Goss-----	Very limited droughty (very limited) small stones (very limited) high erodibility (limited)	1.00 1.00 0.80	Very limited small stones (very limited) high erodibility (limited) droughty (limited)	1.00 0.80 0.61	Limited droughty (limited) small stones (moderately limited) large stones (slightly limited)	0.61 0.33 0.17	Limited droughty (limited) large stones (slightly limited) small stones (slightly limited)	0.61 0.17 0.15	Limited droughty (limited) large stones (slightly limited)	0.61 0.17
70060: Hoberg-----	Very limited droughty (very limited) moderate erodibility (moderately limited) wetness (moderately limited)	1.00 0.50 0.44	Moderately limited moderate erodibility (moderately limited) wetness (moderately limited) percs slowly (moderately limited)	0.50 0.44 0.39	Moderately limited wetness (moderately limited) droughty (slightly limited)	0.44 0.23	Moderately limited wetness (moderately limited) droughty (slightly limited)	0.44 0.23	Moderately limited wetness (moderately limited) droughty (slightly limited)	0.59 0.23

Table 14.--Wildlife Habitat--Continued

Map symbol and soil name	Grain and seed crops (for use as food and cover)		Domestic grasses and legumes (for use as food and cover)		Upland wild herbaceous plants		Upland shrubs and vines		Upland deciduous trees	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70060: Eldorado-----	Limited droughty (very limited) moderate erodibility (moderately limited)	0.99 0.50	Moderately limited moderate erodibility (moderately limited)	0.50	Not limited		Not limited		Not limited	
Pomme-----	Moderately limited moderate erodibility (moderately limited) droughty (moderately limited)	0.50 0.34	Moderately limited moderate erodibility (moderately limited)	0.50	Not limited		Not limited		Not limited	
70061: Pomme-----	Moderately limited droughty (moderately limited)	0.34	Not limited		Not limited		Not limited		Not limited	
70062: Pomme-----	Moderately limited droughty (moderately limited)	0.34	Not limited		Not limited		Not limited		Not limited	
Rueter-----	Very limited droughty (very limited) small stones (very limited)	1.00 1.00	Very limited small stones (very limited) droughty (limited)	1.00 0.79	Limited droughty (limited) small stones (moderately limited)	0.79 0.38	Limited droughty (limited) small stones (slightly limited)	0.79 0.24	Limited droughty (limited)	0.79
70063: Rueter-----	Very limited droughty (very limited) small stones (limited) high erodibility (limited)	1.00 0.96 0.80	Limited droughty (limited) small stones (limited) high erodibility (limited)	0.99 0.96 0.80	Limited droughty (limited) small stones (slightly limited) large stones (slightly limited)	0.99 0.20 0.17	Limited droughty (limited) large stones (slightly limited)	0.99 0.17	Limited droughty (limited) large stones (slightly limited)	0.99 0.17
70064: Rueter-----	Very limited droughty (very limited) small stones (very limited) moderate erodibility (moderately limited)	1.00 1.00 0.50	Very limited small stones (very limited) droughty (limited) moderate erodibility (moderately limited)	1.00 0.79 0.50	Limited droughty (limited) small stones (moderately limited)	0.79 0.38	Limited droughty (limited) small stones (slightly limited)	0.79 0.24	Limited droughty (limited)	0.79

Table 14.--Wildlife Habitat--Continued

Map symbol and soil name	Grain and seed crops (for use as food and cover)		Domestic grasses and legumes (for use as food and cover)		Upland wild herbaceous plants		Upland shrubs and vines		Upland deciduous trees	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
70065: Rueter-----	Very limited droughty (very limited)	1.00	Very limited small stones (very limited)	1.00	Limited droughty (limited)	0.79	Limited droughty (limited)	0.79	Limited droughty (limited)	0.79
	small stones (very limited)	1.00	high erodibility (limited)	0.80	small stones (moderately limited)	0.38	small stones (slightly limited)	0.24		
	high erodibility (limited)	0.80	droughty (limited)	0.79						
70066: Winnipeg-----	Not limited		Not limited		Not limited		Not limited		Not limited	
71751: Bearthicket---	Moderately limited flooding (moderately limited)	0.60	Moderately limited flooding (moderately limited)	0.60	Not limited		Not limited		Not limited	
73031: Gerald-----	Very limited percs slowly (very limited)	1.00	Very limited percs slowly (very limited)	1.00	Moderately limited wetness (moderately limited)	0.60	Moderately limited wetness (moderately limited)	0.60	Limited wetness (limited)	0.99
	wetness (moderately limited)	0.60	wetness (moderately limited)	0.60						
	moderate erodibility (moderately limited)	0.50	moderate erodibility (moderately limited)	0.50						
75376: Cedargap-----	Limited flooding (limited)	0.90	Limited flooding (limited)	0.90	Slightly limited small stones (slightly limited)	0.04	Not limited		Not limited	
	droughty (limited)	0.74	small stones (moderately limited)	0.33						
	small stones (moderately limited)	0.33								
99000: Pits-----	Not rated		Not rated		Not rated		Not rated		Not rated	
Quarries-----	Not rated		Not rated		Not rated		Not rated		Not rated	
99001: Water-----	Not rated		Not rated		Not rated		Not rated		Not rated	
99002: Borrow areas--	Not rated		Not rated		Not rated		Not rated		Not rated	

Table 14.--Wildlife Habitat--Continued

Map symbol and soil name	Grain and seed crops (for use as food and cover)		Domestic grasses and legumes (for use as food and cover)		Upland wild herbaceous plants		Upland shrubs and vines		Upland deciduous trees	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
99003: Miscellaneous water-----	Not rated		Not rated		Not rated		Not rated		Not rated	
99005: Landfill-----	Very limited percs slowly (very limited) slope (limited)	1.00 0.79	Very limited percs slowly (very limited) slope (limited)	1.00 0.79	Not limited		Not limited		Not limited	
99010: Dumps-----	Not rated		Not rated		Not rated		Not rated		Not rated	
Pits-----	Not rated		Not rated		Not rated		Not rated		Not rated	
99011: Kanima-----	Very limited droughty (very limited) small stones (very limited) moderate erodibility (moderately limited)	1.00 1.00 0.50	Very limited small stones (very limited) moderate erodibility (moderately limited) droughty (slightly limited)	1.00 0.50 0.09	Limited small stones (limited) droughty (slightly limited)	0.73 0.09	Limited small stones (limited) droughty (slightly limited)	0.73 0.09	Slightly limited droughty (slightly limited)	0.09